IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of:

Applicant(s): Joshua T. Goodman, *et al.*   Examiner: Farid Homayounmehr

Serial No: 10/669,545   Art Unit: 2132

Filing Date: September 23, 2003

Title: ORDER-BASED HUMAN INTERACTIVE PROOFS (HIPS) AND AUTOMATIC
         DIFFICULTY RATING OF HIPS

Mail Stop RCE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

SUBMISSION PURSUANT TO 37 CFR §1.114

Dear Sir:

        This submission is being concurrently filed with an RCE, pursuant to 37 CFR §1.114, for the above-identified patent application. Favorable consideration of the subject patent application is respectfully requested in view of the comments and amendments herein. A credit card payment form is filed concurrently herewith in connection with all fees due regarding this document and the RCE. In the event any additional fees may be due and/or are not covered by the credit card, the Commissioner is authorized to charge such fees to Deposit Account No. 50-1063 [MSFTP440US].

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions of claims in the application:

Listing of Claims:

1.   (Currently Amended) A system that facilitates identifying human interaction comprising a computer processor ~~for~~ executing ~~the following~~ software components, the <u>software components</u> ~~system is~~ recorded on a computer-readable medium and <u>being executed by the computer processor</u> ~~capable of execution by a computer~~:

        an access control component that controls access to one of a computer-based action and computer-based application; and

        an identification component that facilitates determining that access is initiated by a human, the identification component presenting an order-based <u>human interactive proof (HIP)</u> problem to be solved before access is allowed, the order-based problem <u>being a "start to end" HIP and</u> comprising an arrangement of a plurality of objects whereby a user is asked to correctly identify at least a subset of the objects as well as to identify them in a particular order, the order being based at least in part upon a set of instructions provided to the user<u>, and to find a path of a consistent type and identify objects such as characters along the path, wherein at least a first subset of the objects being at least partially obscured by a second subset of objects, and wherein the path of a consistent type comprises a subset of objects which are connected by a consistent type of connector, the connector being selected from a group consisting of any one of arrows, lines, dotted lines, dashed lines, and shapes,</u> and the identification component communicating with an order-based problem database to retrieve order-based problems as needed<u>;</u>

        <u>wherein the objects comprise images, pictures, shapes, characters, and other visual elements which are identifiable by a human, and wherein any one of the images, pictures, shapes, characters, and other visual elements vary in at least one of size, dimension, color, and distortion.</u>

2.   (Canceled)

3.   (Canceled)

4.   (Canceled)

5.   (Canceled)

6.   (Canceled)

7.   (Canceled)

8.   (Currently Amended) The system of claim 1 7, wherein at least a portion of the connectors are obscured by at least one of the following: at least one translucent shape and at least one opaque shape.

9.   (Original) The system of claim 8, the at least one translucent shape obscuring larger portions of the connectors.

10.   (Original) The system of claim 8, the at least one opaque shape obscuring smaller portions of the connectors.

11.   (Currently Amended) The system of claim 1 7, the connectors being arrows whereby a user is required to identify a connected sequence of arrows, the arrows being of a same type, from a start position to an end position.

12.   (Original) The system of claim 1, the order-based problem being a three-dimensional HIP wherein a user is required to find an ordering of objects in a three-dimensional image.

13.   (Original) The system of claim 12, the ordering of objects being determined from at least one of a front-to-back viewing and a back-to-front viewing of the image.

14.   (Original) The system of claim 12, the ordering of objects being determined from at least one of a left-to-right viewing and a right-to-left viewing of the image.

15.   (Original) The system of claim 12, wherein the objects comprise any one of letters and numbers.

16.   (Original) The system of claim 12, wherein the objects vary in size.

17.   (Original) The system of claim 12, wherein the image comprises one or more depth clues, the clues comprising any one of shadows, reflections, fog, and partial occlusions.

18.   (Original) The system of claim 17, the partial occlusions comprising at least a first object blocking at least a portion of a second object.

19.   (Original) The system of claim 17, the shadows being produced by multiple light sources.

20.   (Original) The system of claim 1, the order-based problem being a maze HIP wherein a user is required to maneuver an object through a maze configuration from a start position to an end position and to identify characters from a start position to an end position in the maze.

21.   (Original) The system of claim 20, the object being a rectangular block.

22.   (Original) The system of claim 20, the maze HIP configuration comprising a plurality of objects arranged in such a way as to provide a single path for the object to maneuver through a subset of the plurality of objects to reach the end position.

23.   (Original) The system of claim 22, the plurality of objects comprising at least one of geometric shapes, rounded shapes, pointed shapes, angled shapes, and images of real objects.

24.   (Original) The system of claim 23, wherein recognition of the images of real objects is required to determine the path for the odd-shaped object.

25.   (Currently Amended) A method that facilitates identifying human interaction comprising:

presenting an order-based HIP to a user desiring access to at least one of a HIP-controlled computer-based action and a HIP-controlled computer-based application, the order-based HIP being retrieved from a HIP database;

requesting the user to solve the order-based HIP to gain the access, solving the order-based HIP, comprising:

viewing an image comprising a plurality of objects;

identifying at least a subset of the objects, the subset of objects determined at least in part upon a set of given instructions, wherein at least a first subset of the objects being at least partially obscured by a second subset of objects; and

ordering the at least a subset of the objects, the ordering determined at least in part upon the set of given instructions; and

determining whether access should be given based at least in part on the user's response to the HIP.

26.   (Canceled)

27.   (Original) The method of claim 25, the objects comprising any one of the following: shapes, images, letters, and numbers.

28.   (Canceled)

29.   (Original) The method of claim 25, at least a subset of the objects being distorted.

30.   (Original) The method of claim 25, further comprising allowing access to at least one of the computer-based action and computer-based application when an acceptable answer to the HIP is given.

31.   (Original) The method of claim 30, the acceptable answer being at least one of the following:

a correct answer; and

an answer consistently received from a percentage of users, whereby the percentage exceeds a minimum threshold.

Claims 32-70 (Canceled)

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REMARKS

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Claims 1, 3-25, 27-31, 67 and 68 are currently pending in the subject application and are presently under consideration. Claims 1, 8, 11 and 25 have been amended as shown on pp. 2-6 of the Reply. Claims 3-7, 28, 32-64 and 66-70 have been canceled.

Favorable reconsideration of the subject patent application is respectfully requested in view of the comments and amendments herein.

I.   Rejection of Claim 68 Under 35 U.S.C. §112, sixth paragraph

In the Final Office Action dated August 7, 2007, claim 68 stands rejected under 35 U.S.C. §112, sixth paragraph because the claim does not pass the 3-prong analysis for "means for" claim limitations. Claim 68 has been canceled, as such the rejection is moot and should be withdrawn.

II.   Rejection of Claims 1, 67 and 68 Under 35 U.S.C. §112, second paragraph

In the Final Office Action dated August 7, 2007, claims 1, 67 and 68 stand rejected under 35 U.S.C. §112, second paragraph as failing to define the subject matter which the applicant regards as his invention. Claim 1 has been amended to correct any deficiencies related to this rejection. Claims 67 and 68 have been canceled, as such the rejection is moot and should be withdrawn.

III.   Rejection of Claims 1-24, 65, 67 and 68 Under 35 U.S.C. §101

In the Final Office Action dated August 7, 2007, claims 1-24, 65, 67 and 68 stand rejected under 35 U.S.C. §101 because the claimed invention is directed to non-statutory subject matter. Independent claim 1 has been amended herein to clearly illustrate that elements within such claims are components associated with a computer processor. In particular, claim 1 as amended is directed towards a system that facilitates identifying human interaction, comprising *a computer processor executing software components, the software components recorded on a computer-readable medium and being executed by the computer processor*... (Support for these amendments can be found on pg. 7, lines 23-30). Claims 67 and 68 have been canceled. Accordingly, this rejection should be withdrawn with regard to claims 1-24, 65, 67 and 68.

IV.   Rejection of Claims 1-5 Under 35 U.S.C. §102(e)

In the Final Office Action dated August 7, 2007, claims 1-5 stand rejected under 35 U.S.C. §102(e) as being anticipated by Pinkas *et al.* (US 2004/0073813). It is respectfully requested that this rejection should be withdrawn for at least the following reasons. Pinkas *et al.* does not teach or suggest each and every element as set forth in the subject claims.

> A single prior art reference anticipates a patent claim only if it expressly or inherently describes each and every limitation set forth in the patent claim. *Trintec Industries, Inc. v. Top-U.S.A. Corp.*, 295 F.3d 1292, 63 USPQ2d 1597 (Fed. Cir. 2002); *See Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the ... claim. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

The claimed subject matter relates to a system and/or methodology for generating order-based human interactive proofs (HIPs) as well as systems and methods that facilitate rating their difficulty automatically. In general, HIPs are puzzles that ask users to solve a problem to prove that they are a human being and are effectively employed to control access to any type of useful program, tool, device, system or set-up system (*e.g.*, email, email account set-up, websites). In particular, independent claim 1 recites a system that facilitates identifying human interaction, comprising: *an access control component that controls access to one of a computer-based action and computer-based application; and an identification component that facilitates determining that access is initiated by a human, the identification component presenting an order-based human interactive proof (HIP) problem to be solved before access is allowed, the order-based problem being a "start to end" HIP and comprising an arrangement of a plurality of objects whereby a user is asked to correctly identify at least a subset of the objects as well as to identify them in a particular order, the order being based at least in part upon a set of instructions provided to the user, and to find a path of a consistent type and identify objects such as characters along the path, wherein at least a first subset of the objects being at least partially obscured by a second subset of objects, and wherein the path of a consistent type comprises a subset of objects which are connected by a consistent type of connector, the connector being selected from a group consisting of any one of arrows, lines, dotted lines, dashed lines, and shapes, and the identification component communicating with an order-based problem database to retrieve order-based problems as needed; wherein the objects comprise images, pictures, shapes, characters, and other visual elements which*

are identifiable by a human, and wherein any one of the images, pictures, shapes, characters, and other visual elements vary in at least one of size, dimension, color, and distortion. Pinkas *et al.* does not expressly or inherently disclose the aforementioned novel aspects of applicants' claimed subject matter as recited in the subject claims.

Pinkas *et al.* discloses a method for establishing a secure channel between a user and a computer application. The method is performed by rendering to the user a randomly selected identifier; receiving input from the user based on both the randomly selected identifier and a secret identifier associated with the user; determining, based on the input whether the user demonstrates knowledge of the secret identifier; and authenticating or not authenticating the user based upon the outcome of said determining step. (*See* pg. 1, paragraph [0011]).

In contrast, applicants' claimed subject matter discloses a system that facilitates identifying human interaction. The system includes an identification component that facilitates determining that access has been initiated or requested by a human – rather than automatically by a computer. This is accomplished by presenting an order-based problem, such as a human interactive proof (HIP), to be solved. A correct response must be received by the identification component in order for access to be granted to the user by the access controller component.

Order-based HIPs, unlike sequence-based HIPs, require different techniques to be solved. In some instances, some minimum amount of knowledge about one or more objects or images included in the HIP can be necessary or required for solving it. In addition to identifying individual elements and only the relevant elements (*e.g.,* not all are necessarily included in the correct answer), providing a correct order of the relevant elements is also important for solving the HIP. Additionally, the difficulty level of the HIP can be further modified by at least partially obscuring the connections. In one instance, the connections can be partially obscured by translucent shapes in which relatively large portions of the arrows are obscured. In another instance, smaller portions of the connections can be obscured by opaque or shaded shapes. Color and/or grayscale shading can also be employed in order to modify and/or adjust the difficulty of the order-based HIP. (*See* pg. 9, line 13-pg. 10, line 27).

Pinkas *et al.* merely discloses establishing a secure channel between a human user and an application running on a computer system, *via* generating a unique identifier (PIN) associated with a user. (*See* pg. 2, paragraph [0021]). Applicants' claimed system utilizes order-based HIPs from a database to determine that access has been initiated by a human. Order-based HIPs, unlike

sequence-based HIPs or PINs, require different techniques to be solved, such as not only identifying individual elements, but also providing the correct order of the relevant elements. This is opposed to Pinkas *et al.*, in which a PIN is generated and a selected identifier, and the user identifies the difference between the identifier and the PIN. The secure application then compares the result and if the result reflects the fact that the user knows the PIN, the user is authenticated.

Pinkas *et al.* does not utilize an order-based HIP which includes a first subset of objects that are partially obscured by a second subset of objects. Accordingly, Pinkas *et al.* does not expressly or inherently disclose a system that provides …. *an identification component that facilitates determining that access is initiated by a human, the identification component presenting an order-based HIP problem to be solved before access is allowed, **the order-based problem being a "start to end" HIP and comprising an arrangement of a plurality of objects whereby a user is asked to correctly identify at least a subset of the objects as well as to identify them in a particular order**, the order being based at least in part upon a set of instructions provided to the user, **wherein at least a first subset of the objects being at least partially obscured by a second subset of objects**, …*.

In view of at least the above, it is readily apparent that Pinkas *et al.* fails to expressly or inherently disclose applicants' claimed subject matter as recited in independent claim 1 (and claims 2-5 which respectively depend there from). Accordingly, it is respectfully requested that these claims be deemed allowable.

V.   Rejection of Claims 6-31, 65, 67 and 68 Under 35 U.S.C. §103(a)

In the Final Office Action dated August 7, 2007, claims 6-31, 65, 67 and 68 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Pinkas *et al.* in view of Mizrah (US 2004/0225880). It is respectfully requested that this rejection should be withdrawn for at least the following reasons. Pinkas *et al.* and Mizrah, individually or in combination, do not teach or suggest each and every element as set forth in the subject claims.

> To reject claims in an application under §103, an examiner must show an unrebutted *prima facie* case of obviousness. A *prima facie* case of obviousness is established by a showing of three basic criteria. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

See MPEP §706.02(j). The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicants' disclosure. *See In re Vaeck,* 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

As stated *supra,* the claimed subject matter relates to a system and/or methodology for generating order-based human interactive proofs (HIPs) as well as systems and methods that facilitate rating their difficulty automatically. In particular, independent claim 25 recites a method that facilitates identifying human interaction comprising: ***presenting an order-based HIP to a user desiring access to at least one of a HIP-controlled computer-based action and a HIP-controlled computer-based application,*** *the order-based HIP being retrieved from a HIP database; requesting the user to solve the order-based HIP to gain the access, solving the order-based HIP, comprising: viewing an image comprising a plurality of objects; identifying at least a subset of the objects, the subset of objects determined at least in part upon a set of given instructions,* ***wherein at least a first subset of the objects being at least partially obscured by a second subset of objects****; and ordering the at least a subset of the objects, the ordering determined at least in part upon the set of given instructions; and determining whether access should be given based at least in part on the user's response to the HIP.* The cited art, individually or in combination, fails to teach or suggest such aspects of the claimed subject matter.

Pinkas *et al.* discloses a method for establishing a secure channel between a user and a computer application. The method is performed by rendering to the user a randomly selected identifier; receiving input from the user based on both the randomly selected identifier and a secret identifier associated with the user; determining, based on the input whether the user demonstrates knowledge of the secret identifier; and authenticating or not authenticating the user based upon the outcome of said determining step. (*See* pg. 1, paragraph [0011]).

In contrast, applicants' claimed subject matter discloses a system that facilitates identifying human interaction. The system utilizes order-based HIPs to identify whether the user is human. Order-based HIPs, unlike sequence-based HIPs, require different techniques to be solved. In some instances, some minimum amount of knowledge about one or more objects or images included in the HIP can be necessary or required for solving it. In addition to identifying individual elements and only the relevant elements (*e.g.,* not all are necessarily included in the correct answer), providing a correct order of the relevant elements is also important for solving the HIP. Additionally, the difficulty level of the HIP can be further modified by at least partially obscuring

the connections. In one instance, the connections can be partially obscured by translucent shapes in which relatively large portions of the arrows are obscured. In another instance, smaller portions of the connections can be obscured by opaque or shaded shapes. Color and/or grayscale shading can also be employed in order to modify and/or adjust the difficulty of the order-based HIP. (*See* pg. 9, line 13-pg. 10, line 27).

Pinkas *et al.* merely discloses establishing a secure channel between a human user and an application running on a computer system, *via* generating a unique identifier (PIN) associated with a user. (*See* pg. 2, paragraph [0021]). Pinkas *et al.* does not utilize an order-based HIP which includes a first subset of objects that are partially obscured by a second subset of objects. Accordingly, Pinkas *et al.* does not expressly or inherently disclose a method that provides *presenting an order-based HIP to a user desiring access to at least one of a HIP-controlled computer-based action and a HIP-controlled computer-based application, the order-based HIP being retrieved from a HIP database; requesting the user to solve the order-based HIP to gain the access, solving the order-based HIP, comprising: viewing an image comprising a plurality of objects; identifying at least a subset of the objects, the subset of objects determined at least in part upon a set of given instructions, wherein at least a first subset of the objects being at least partially obscured by a second subset of objects; and ordering the at least a subset of the objects, the ordering determined at least in part upon the set of given instructions; and determining whether access should be given based at least in part on the user's response to the HIP.*

Mizrah does not cure the deficiencies of Pinkas *et al.* with respect to independent claim 25, Mizrah discloses an interactive method for authentication of a client in a network environment which utilizes first and second "what user knows" authentication factors. The first and second "what user knows" authentication factors are algorithmically and parametrically independent. (*See* pg. 3, paragraph [0065]).

In contrast, applicants' claimed subject matter utilizes order-based HIPs from a database to determine that access has been initiated by a human, wherein a first subset of objects are partially obscured by a second subset of objects to increase difficulty. Accordingly, Mizrah also does not expressly or inherently disclose a method that provides *presenting an order-based HIP to a user desiring access to at least one of a HIP-controlled computer-based action and a HIP-controlled computer-based application, the order-based HIP being retrieved from a HIP database; requesting the user to solve the order-based HIP to gain the access, solving the order-based HIP, comprising:*

viewing an image comprising a plurality of objects; identifying at least a subset of the objects, the subset of objects determined at least in part upon a set of given instructions, **wherein at least a first subset of the objects being at least partially obscured by a second subset of objects;** *and ordering the at least a subset of the objects, the ordering determined at least in part upon the set of given instructions; and determining whether access should be given based at least in part on the user's response to the HIP.*

In view of the aforementioned deficiencies of the cited art, it is respectfully submitted that this rejection be withdrawn with respect to independent claims 1, 25, 65, 67 and 68 (and claims 6-24 and 26-31 which respectively depend there from).

CONCLUSION

The present application is believed to be in condition for allowance in view of the above comments and amendments. A prompt action to such end is earnestly solicited.

In the event any fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063 [MSFTP440US].

Should the Examiner believe a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact applicants' undersigned representative at the telephone number below.

Respectfully submitted,

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